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TWELVE MILE CREEK WATERSHED PROJECT  
Union, Adair, and Ringgold Counties, Iowa

FINAL ENVIRONMENTAL STATEMENT

Kenneth E. Grant  
Administrator  
Soil Conservation Service

Adair County Soil Conservation District, Greenfield, Iowa 50849  
Union County Soil Conservation District, Creston, Iowa 50801  
Union County Board of Supervisors, Creston, Iowa 50801  
City of Creston, Creston, Iowa 50801  
Creston Board of Water Works Trustees, Creston, Iowa 50801  
Iowa State Conservation Commission, Des Moines, Iowa 50319

December 1973

PREPARED BY

UNITED STATES DEPARTMENT OF AGRICULTURE

Soil Conservation Service

Washington, D. C. 20250

MAY 8 1975

USDA ENVIRONMENTAL STATEMENT

TWELVE MILE CREEK WATERSHED

Union, Adair, and Ringgold Counties

Iowa

Prepared in Accordance with  
Sec. 102(2)(C) of P.L. 91-190

Summary Sheet

- I Final
- II Soil Conservation Service
- III Administrative
- IV The project plan provides for conservation land treatment measures, 11 grade stabilization structures for gully erosion control, 22 floodwater retarding structures and 1 multiple purpose reservoir with capacity for floodwater retarding and municipal and industrial water. All structural measures and project benefits are in Union County, Iowa.
- V The project will reduce flood damages by 85 percent on the 2,272 acres of flood plain. Gully erosion damages to 3,255 acres will be avoided. The City of Creston, Iowa will have a dependable water supply. Nine hundred and twenty-four acres of water area will be created. This area will be lost to agricultural and wildlife use. An estimated 662 acres will be periodically flooded, 3 families will be relocated, 5 farm operations will be affected, and 4 roads will be closed.
- VI Alternatives considered were land treatment, structures with channel improvement, and no project.
- VII Comments were received from: Governor of Iowa (Department of Soil Conservation); State Clearinghouse (Office for Planning and Programming); Department of the Army; Department of Health, Education, and Welfare; Department of the Interior; Department of Transportation; Environmental Protection Agency.
- VIII Final statement transmitted to CEQ on December 21, 1973.  
Draft statement transmitted to CEQ on July 9, 1973.



## USDA SOIL CONSERVATION SERVICE ENVIRONMENTAL STATEMENT

Type of Statement: Final

Date: December 1973

Type of Action: Administrative

Title of Statement: Twelve Mile Creek Watershed Project  
Union, Adair, and Ringgold Counties, Iowa

1. Description

Authority for Project: Federal assistance through P.L. 566, 83d Congress, 68 Stat. 666, as amended.

Sponsoring Local Organizations:

Adair County Soil Conservation District  
Union County Soil Conservation District  
Union County Board of Supervisors  
City of Creston  
Creston Board of Water Works Trustees  
State Conservation Commission

Purpose of Project: The project purposes are flood prevention; watershed protection from damage by sheet, rill, and gully erosion; and to provide an adequate municipal and industrial water supply for the City of Creston.

Project Measures: The project provides for conservation land treatment measures, 11 grade stabilization structures for prevention of gully erosion, 22 floodwater retarding structures, and 1 multiple-purpose reservoir with capacity for floodwater retardation and municipal and industrial water supply.

Environmental Setting:

Physical Data: Twelve Mile Creek Watershed, containing 50,030 acres or 78.17 square miles, is located in Union County (47,770 acres), Adair County (2,000 acres), and Ringgold County (260 acres) in south central Iowa. It lies just east of Creston, Iowa; 1970 population, 8,234. It is 50 miles southwest of Des Moines, Iowa, and is 85 miles east of the Omaha-Council Bluffs metropolitan area.

Twelve Mile Creek is a tributary to the Thompson River which flows into the Grand River. The Grand River and its tributaries form a subregion of the Missouri Region as delineated by the Water Resources Council.

The major problems in the watershed are floodwater damage to crop and pasture on 2,272 acres of flood plain and voiding and depreciation by gully erosion on 3,255 acres of upland.

There are two major soil associations in Twelve Mile Creek Watershed. The Shelby-Sharpsburg-Macksburg Soil Association is in the northern part of the watershed and the Adair-Grundy-Haig is in the remainder.

The Sharpsburg, Macksburg, Grundy, and Haig are developed in loess (wind-blown materials). These soils occupy about 35 percent of the watershed. They are located on ridges and adjacent gentle slopes. These soils are highly erodible and are susceptible to gully development.

The Shelby and Adair soils developed in glacial drift and occupy about 49 percent of the watershed. They are found on steeper slopes adjacent to the bottomland.

The bottomland soils are Colo-Zook complex, Colo silty clay loam, and Nodaway silt loam. They occupy about 16 percent of the watershed. They are dark colored, moderate to imperfectly drained and subject to frequent overflow. A major portion of these soils is used for cropland.

Bedrock geology of the watershed is the Pennsylvanian system. The upstream portion is underlain by the Virgil series and the downstream portion is underlain by the Missouri series of the Pennsylvanian system. Over the Pennsylvanian system is the Kansan glacial till. In much of the area there is a layer of loess overlaying the glacial till.

The topography of the watershed varies. The major portion is gently rolling to rolling. The upstream portion has some level to nearly level areas. The natural drainage system of the watershed is well developed. Elevation ranges from 990 feet to 1,360 feet.

The climate of the watershed is of the extreme midcontinental type. Hot winds and prolonged hot periods occur occasionally in July and August. Average annual precipitation is 30.5 inches with 22 inches occurring as rain during the months of April through September. Snowfall averages 25.5 inches annually. 1/ 2/

January, the coldest month, has an average temperature of 22.5 degrees F and July, the hottest month, an average temperature of 76 degrees F. Average annual temperature is 50 degrees F with recorded extremes of -22 and +112 degrees F. The average frost-free growing season is 163 days from mid-April to early October. 1/ 2/

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1/ Climatic Summary of the United States - Supplement for 1931 through 1952. U. S. Department of Commerce, Weather Bureau.

2/ Climatological Data - Annual Summaries 1953 through 1972 - U. S. Department of Commerce, National Oceanic and Atmospheric Administration.



Runoff from periods of short duration excessive rainfall, typical of this climate, causes flooding and channel stability problems. The recorded maximum point rainfall at Des Moines for various durations, is as follows: 5 minutes, 0.78 inches; 15 minutes, 1.36 inches; 1 hour, 2.65 inches; 6 hours, 4.86 inches; and 24 hours, 5.37 inches.<sup>1/</sup> Rainfall intensity in inches per hour is shown in the following table:<sup>2/</sup>

Duration	Rainfall Intensity - Inches Per Hour					
	Frequency-Years					
	2	5	10	25	50	100
5 minute	4.6	5.7	6.5	7.4	8.0	8.8
15 minute	3.1	3.9	4.4	5.1	5.6	6.1
1 hour	1.4	1.8	2.2	2.6	2.8	3.2
6 hours	0.36	0.52	0.61	0.75	0.84	0.94
24 hours	0.12	0.15	0.17	0.20	0.23	0.26

The principal source of rural domestic water is the shallow ground water aquifer. Water from this aquifer is of adequate quality; however, the quantity available is often inadequate with wells going dry during drought periods. The deep ground water aquifers are not used because of high development cost and high mineral content. Water for the City of Afton is obtained from a surface water reservoir located on a tributary of Twelve Mile Creek. The surface runoff water is of adequate quality for Afton to use in its water system. The main source of livestock water is surface runoff stored in small impoundment reservoirs.

There appear to be no economically important mineral resources in the watershed.

The present land use for the watershed is cropland, 53 percent; pasture, 30 percent; forest, 11 percent; and other, 6 percent.

Land use in the flood plain is cropland, 68 percent; pasture, 26 percent; and other 6 percent.

Land use in the upland area is cropland, 52 percent; pasture, 31 percent; forest, 11 percent; and other, 6 percent.

<sup>1/</sup> Technical Paper No. 2 - Maximum Recorded U. S. Point Rainfall - U. S. Department of Commerce, Weather Bureau.

<sup>2/</sup> Technical Paper No. 25, Rainfall Intensity - Duration - Frequency Curves, U. S. Department of Commerce, Weather Bureau.

## LAND USE

Item	Upland		Bottom Land		Watershed	
	Acres	Percent	Acres	Percent	Acres	Percent
Cropland	22,836	52	3,917	68	26,753	53
Pasture	13,695	31	1,498	26	15,193	30
Forest	4,980	11	0	0	5,325	11
Other (such as roads, farm-steads, etc.)	2,759	6	345	6	2,759	6
Total	44,270	100	5,760	100	50,030	100

Approximately 253 farm ponds are scattered over the watershed. The City of Afton water supply reservoir is located on a small tributary in the middle of the watershed. Southwest Federated Power Cooperative, Inc. has a small reservoir in the upper end.

Twelve Mile Creek starts approximately 8 miles north of Creston in Adair County and flows southeasterly across Union County. It outlets into the Thompson River near the southeast corner of Union County. Twelve miles of channel upstream of U. S. Highway 34 are natural and 18 miles downstream are natural except for approximately 4 miles of modified channel occurring in short sections. The streamflow in Twelve Mile Creek is intermittent except for approximately the upper 6 miles where it is ephemeral and at some time every year has very little or no flow. There are no stream gages in the watershed, so data on flows in Twelve Mile Creek are not available. Streamflow is ephemeral in all tributaries.

Economic Data: All land in the watershed is privately owned except road, railroad and other public utility rights-of-way.

The major farm enterprise is the production of cattle and hogs. According to the 1969 U. S. Census of Agriculture, 63 percent of the farms in Union County are livestock farms and 16 percent are cash grain farms.

There are 346 farms located entirely or partially within the watershed. Approximately 79 percent of the farms are owner-operated. The average size farm is 270 acres. The number of people living on farms in Union County, Iowa decreased from 3,674 in 1960 to 2,638 in 1970.

Corn, soybeans, hay, and oats are crops grown in the watershed. Corn and soybeans are the major crops. Present per acre crop yields in the uplands are corn, 90 bushels; soybeans, 35 bushels; oats, 60 bushels; and hay, 3.5 tons.

Per acre yields on the flood plains are corn, 120 bushels; soybeans, 45 bushels; and pasture, 150 animal days per year.

Current land value estimates were obtained from two local land appraisers. They estimated the value of cropland at \$500 per acre, pasture, \$150 per acre and other land \$50 per acre.

Adequate transportation facilities are available to the watershed and surrounding communities. U. S. Highways 34 and 169 intersect in the central portion of the watershed. The Burlington-Northern and Chicago-Great Western Railroads serve the local communities.

There has been a migration of people from the county. The consolidation of farms into larger operating units has caused a decrease in on-farm job opportunities. According to 1969 Census data, 5 percent of the farms in Union County used more than 150 days of hired labor.

Outmigration has tended to hold unemployment at a fairly constant level of approximately 6 percent during the winter months and 4 percent for the remainder of the year.

Census data for 1970 indicates the median family income of Union County is \$7,167 compared to the Iowa median of \$9,018. Approximately 12 percent of the families in Union County had income below the poverty level.

Approximately 50 percent of the farmers in Union County had some off-farm employment with 20 percent having more than 100 days.

Fish and Wildlife Resources: The general land use pattern in the watershed is cropping of bottom lands and flatter ridge tops with pasture, hay and forest interspersed on the more sloping land. This pattern provides diversity of cover and creates edge where two habitat types meet, resulting in a quality habitat for most wildlife species.

Since streams in the watershed have only token flow except during and following periods of rainfall, the fishery is of minor importance. Common species of fish found are minnows and, during periods of prolonged stream flow, catfish. Most of the farm ponds in the watershed provide fishing for largemouth bass or channel catfish.

The watershed is located on the eastern fringe of the Missouri River flyway and migratory waterfowl use the existing ponds for resting areas.

The majority of the fish and wildlife resources are found on privately owned land with access controlled by the landowners.

Pollution does not affect the fish and wildlife resource significantly. Sediment is the most common pollutant.



A 1970 wildlife distribution study<sup>1/</sup> shows rabbit and quail with a high density and deer, squirrel, and pheasant with a moderate density in the watershed area. Deer, quail, and pheasant are hunted heavily with quail and pheasant often attracting hunters from outside the area and a few from outside the state.<sup>2/</sup>

Recreational Resources: Within a 50-mile radius of the watershed there are 9 state parks, 6 state fishing areas, 1 state hunting area, and 5 state areas having both fishing and hunting. All parks offer fishing and modern camping. Capacity is for approximately 2 million annual recreation visits. Use trends<sup>3/</sup> indicate a 6 percent yearly increase in park attendance and 10 percent increase for camping attendance in state parks.

An appraisal of potential for outdoor recreation<sup>4/</sup> rated potential on a high, medium and low scale. Types of recreation developments having a high potential are vacation cabins, cottages and homesites; vacation camping sites; warm water fishing; and big and small game hunting. Other types having a medium potential are transient camping, picnic and sports areas, standard golf courses, waterfowl hunting, scenic and historic areas, vacation farms, and water sports areas.

Attendance at the 9 state parks totaled 1,531,485 in 1972.<sup>3/</sup> Green Valley, the only state park located in Union County, had an attendance of 224,030.

Most existing recreation lakes have high sediment levels following heavy rainfall.

The usual facilities provided at the state parks are modern camping areas, developed picnic areas, modern comfort stations, shelters, boat ramps, and some concessions.

Soil, Water and Plant Management Status: The general vegetative cover conditions in the watershed are classed as good. Pasture planting and renovation with proper utilization and an increase in size of farm units are the major trends.

Soil Conservation Districts in each county are providing technical assistance for the planning and application of land treatment measures.

<sup>1/</sup> State Conservation Commission, Wildlife Section. Reported on scale of high, moderate, low and infrequent.

<sup>2/</sup> "Wildlife Abundance on the Proposed Twelve Mile Creek Watershed Project Area in Southern Iowa". Master's Thesis by D. J. Howell, Iowa State University, Ames, Iowa, 1972.

<sup>3/</sup> "Outdoor Recreation in Iowa", Iowa Conservation Commission, July 1972.

<sup>4/</sup> An appraisal of Potential for Outdoor Recreation Development in Union County, Union County Soil Conservation District, 1971.

There are 346 farms entirely or partially within the watershed. Of this number, 199 farmers, representing 70 percent of the watershed, are district cooperators. One hundred and fifty of these cooperators have conservation plans on their units covering about 55 percent of the watershed.

Soil surveys have been completed on 75 percent of the watershed. These surveys are used for land use planning and for development of land treatment needs.

#### Water and Related Land Resource Problems:

Land Treatment: Sheet and rill erosion is prevalent in the uplands where land treatment measures have not been applied. At present, 41,530 acres of land are considered as adequately protected. Areas not treated will continue to decline in production because of the loss of fertile topsoil.

There is a trend toward more permanent vegetation for use as pasture and hay. This will help to alleviate the problem of erosion in some areas.

Floodwater Damage: Floodwater damage occurs on the flood plain each year. Damage is to crops, pasture, other agricultural facilities such as fences and farm crossings and to nonagricultural facilities such as roads, bridges and public utilities.

Floodwater damage on cropland consists of complete or partial loss of crops, reduction of yields and delay of tillage operations. If operations are sufficiently delayed, lower value crops are substituted. The damage to pasture consists of reduction of quality and quantity of available forage. There are 54 landowners in the flood plain.

The flood plain is subject to floods at any season of the year with 98 percent of the floods occurring during the growing season. The annual flood covers 314 acres; the 2-year frequency flood, 848 acres; the 5-year frequency flood, 1,492 acres; the 25-year frequency flood, 2,080 acres; the 50-year frequency flood, 2,184 acres; and the 100-year frequency flood, 2,272 acres. The average annual area flooded is 1,104 acres. Because of frequent flooding farmers are using parts of the flood plain for pasture and are not intensively managing and cropping other portions.

The average annual floodwater damages are as follows: Crop and pasture, \$31,050, other agricultural, \$8,770 and nonagricultural, \$13,110.

Erosion Damage: The estimated sediment production from all upland in the watershed is 6 tons per acre each year. Four tons per acre are estimated to come from sheet and rill erosion.

Gully erosion provides 43,938 tons per year from 32.55 acres. The 43,938 tons are equivalent to 2 tons per acre per year for the erodible upland area of the watershed.



Unchecked sheet and rill erosion will contribute to a reduction in yields from cropland by the removal of fertile top soil at a rate faster than the subsoil can be made productive.

Gully erosion contributes to the degradation of productivity of cropland in several ways. Land destroyed by voiding is lost to production and much of the area adjacent to the gully depreciates to a less intensive use. Fields divided by gullies sometimes become too small to be economically used for cropland. Land isolated by gullies is not tilled when the cost of reaching the field with machinery is prohibitive.

It is estimated that gully erosion will void or destroy 13.84 acres of land and depreciate or change to a lesser use 18.71 acres of land annually.

The total estimated damages by gully erosion within the watershed are \$29,490 each year.

Sediment Damage: Infertile overwash occurs in small scattered areas of the flood plain affecting an estimated 33 acres annually. Damages caused by sediment deposition are:

1. Deposition covers small plants and smothers them.
2. Deposits lack fertility and water storage for plant use.
3. Young plants are cut or abraded by sandy windblown material.
4. Cost of maintaining future yields is increased.
5. Crop yields are reduced the following amounts: Soybeans, 60 to 70 percent; corn 30 to 60 percent.

Average annual sediment damages are estimated to be \$1,460.

Municipal and Industrial Water: The City of Creston has a critical water supply shortage in years of low runoff. The storage capacity of the present reservoir, Summit Lake, is 464 million gallons and current usage is 270 million gallons per year.

With low runoff, the storage capacity is not adequate to meet the demand and evaporation loss. Creston has an agreement to withdraw water from Green Valley Lake when needed for health and sanitation purposes but this has not worked to Creston's satisfaction. They have been stopped from withdrawing from Green Valley Lake by court injunction on 3 occasions. The City cannot continue to attract industrial development with their present water supply.

The consultant to the Creston Water Board has estimated a 1990 population of 12,000 to be served by the Water Board. He estimated a consumption of 657 million gallons per year and recommended storage of 8,000 acre-feet to provide a dependable supply.

Ground water is available from deep wells; however, it is of low quality because of high mineral content.

Fish and Wildlife: The consolidation of fields and farms eliminates fence rows and other small areas that serve as wildlife habitat. More intensive farming activity, including an increase in beef cow numbers, can result in reduced habitat.

Wildlife habitat quality and quantity is adequate, at the present time, to support moderate to high wildlife populations. However, the increased emphasis on agricultural production suggests a need to protect the existing habitat.

Sport fishing is confined to farm ponds containing largemouth bass, channel catfish, bluegill and bullhead. The small size and lack of management for fish production, usually leads to an over abundance of some species and stunting of fish in the pond. There is a need for water areas that can be stocked with desirable fish species and managed for long term production.

Economic and Social: Nearly all farms located within the watershed are family type farms. The area cannot be considered as economically depressed. Additional employment opportunities are needed to prevent outmigration.

#### Planned Project:

Land Treatment: There are 41,530 acres of land that are considered adequately protected. There will be 2,380 acres adequately protected during the installation period of the project. An additional 6,120 acres will receive partial treatment during this period.

Practices to be applied are terracing, contour farming, grassed waterways, tree planting, pasture planting and other similar conservation measures such as minimum tillage, pasture management and improved rotations.

Technical assistance is available from the Soil Conservation Districts for planning and applying land treatment measures. The State Conservation Commission, Forestry Section, provides technical assistance for planning and applying the forestry treatment measures.

Structural Measures: The structural measures include 22 floodwater retarding structures, 11 grade stabilization structures, 1 multiple-purpose floodwater retarding and municipal water supply structure and municipal and industrial intake structure, pumping plant, and pipeline.

The multiple-purpose structure M-1, will consist of an earth fill dam 51 feet high with a 48-inch diameter concrete pipe spillway. It will form a lake of 633 acres with a maximum depth of 44 feet and a length of 3.8 miles. It will provide for 2,450 acre-feet of sediment expected to accumulate in 100 years, 8,000 acre-feet of municipal and industrial

water for the City of Creston, and 6,433 acre-feet of temporary storage to reduce downstream flooding. The City will acquire 1,380 acres of land around structure M-1. The sediment, multiple-use and detention pools will occupy 874 acres. The remaining 506 acres will be developed for recreation. Limited recreational facilities and public access will be provided by the City of Creston. These will consist of sanitary facilities, drinking water, parking areas, picnic areas and boat ramps. All facilities will comply with State and local public health requirements and will be compatible with the primary use of the reservoir.

The 22 floodwater retarding structures will be located on tributaries which enter Twelve Mile Creek downstream from structure M-1. They will be earth fill detention structures ranging in height from 24 to 40 feet. The principal spillways will be concrete pipes of 18, 24, and 36-inch diameters. They will form sediment or grade stabilization pools of 4.4 to 26 acres and floodwater retarding pools of 8.7 to 81.5 acres.

Ten of the 11 grade stabilization structures will be detention type earth fill structures ranging in height from 22 to 34 feet. The principal spillways will be corrugated metal pipe conduits of 18 and 24 inch diameters. They will form grade stabilization pools of 3.0 to 7.8 acres and floodwater retarding pools of 4.8 to 14.7 acres. The remaining grade stabilization structure will be a concrete drop spillway.

Ten of the grade stabilization structures and 13 of the floodwater retarding structures will have storage for 100 years of sediment accumulation. The storage allocated to sediment will provide aquatic habitat for an estimated 80 years. The other 9 floodwater retarding structures will have 50 years of sediment storage below the principal spillway inlet and are designed so their principal spillway inlets can be raised to provide for an additional 50 year sediment accumulation. These 9 structures will also provide 80 years of aquatic habitat.

Mitigation of wildlife habitat losses will be provided on private lands through easements to the State Conservation Commission under their Farm Game Habitat Program. One to 5 acre plots will be planted and managed for wildlife habitat on 155 acres near the planned impoundments in the watershed. The State Conservation Commission will maintain these plots. The following tabulation shows the 26 structure sites where mitigating measures are planned and the acres involved at each site.



<u>Structure Number</u>	<u>Acres</u>	<u>Structure Number</u>	<u>Acres</u>
17	5	48	2
18	4	49	2
23	3	55	2
27	5	D-59	10
30	3	D-60	7
D-35	8	D-61	5
35-2	4	D-62	4
36	2	D-62A	4
40-1	3	68-1	1
D-41A	14	68-2	1
D-44	9	72-1	1
D-44-1	9	72-2	2
46	3	M-1	42

The present use of the land needed for all structural measures is presented in the following Land Use Summary.

#### LAND USE SUMMARY

Project Land Use	Present Land Use in Acres				
	Cropland	Pasture	Forest	Other	Total
Sediment and M&I					
Pools	412	279	96	137	924
Detention Pools	171	219	114	158	662
Recreation Land	268	153	55	30	506
Dams & Spillways	64	56	--	--	120
Total	915	707	265	325	2,212
Change to Public Ownership	612	424	162	182	1,380

The pools will inundate 27 miles of natural stream channel of which 21 miles have ephemeral flow and 6 miles have intermittent flow.

The wildlife habitat that will be lost to the structural measures is of varying quality. The pasture and grazed woodland are low quality and used by transient wildlife. Cropland is also low quality and mainly used for food in the fall and winter. The highest quality habitat is the idle land next to the gullies and is used for nesting and cover.

The floodwater retarding sites and the grade stabilization sites will remain in private ownership. The multiple-purpose site will be acquired

by the City of Creston and will be removed from the tax rolls. The area of this site is 1,380 acres including 874 acres in the floodwater retarding pool and 506 acres in the recreational area.

Construction operations will be performed in compliance with all applicable Federal, State, and local laws and regulations concerning the control of environmental pollution. Water and air pollution at the construction sites will be controlled by the following methods as needed:

1. Leaving the existing vegetation on work areas as long as possible.
2. Constructing debris basins.
3. Diverting runoff water from highly erodible areas.
4. Establishing temporary vegetative cover.
5. Controlling smoke during burning.
6. Suppressing dust on haul roads.
7. Scheduling operations so that unvegetated areas are not exposed over long periods of time.

Provisions of P.L. 86-523 relating to the preservation of historical and archeological data will be followed. Investigations by the State Archeologist's office indicate that installation of the project will not encroach on any known archeological value or historical place. Should any historical or archeological artifact be uncovered or found during construction, the National Park Service will be notified through the offices of the State Historic Preservation Officer and the State Archeologist.

The structures will be designed to minimize potential vector problems. Drains will be installed to eliminate seepy or marshy areas below the dams. Surface drainage will be provided for all exposed borrow areas to aid in mosquito control. Floodwater retarding structures and multiple purpose reservoirs will be cleared of woody growth. Brush and weeds along paths, trails, roadways, and other areas of frequent use by visitors will be removed to minimize the likely tick infestation.

The structural measures will be maintained by the sponsoring local organization in accordance with the Operation and Maintenance section of the work plan.

The sponsors and the Soil Conservation Service will make an annual inspection of completed structural measures for 3 years. After this period the sponsor will make the annual inspection and furnish a copy to the Soil Conservation Service. The City of Creston will inspect and maintain recreational facilities. Following are some of the operation and maintenance actions to be taken:



1. Replace soil removed by erosion and rodents on earthfills and emergency spillways.
2. Reestablish vegetative cover on earthfills, emergency spillways, borrow areas, and the recreational areas.
3. Remove debris accumulation in sediment and temporary pools.
4. Replace damaged riprap.
5. Replace or repair damaged sections of the principal spillway.
6. Restore deteriorated concrete.
7. Stabilize the outlet of the principal spillway.
8. Keep gates, trash racks, and guard rails in proper working order.
9. Remove undesirable vegetation from earthfills, emergency spillways, and the recreational area.
10. Replace damaged recreational facilities.

Creston will operate the recreational facilities in a safe and sanitary manner. The SCS will furnish technical assistance to aid in inspection and technical design for maintenance and repair.

All structures except the multiple-purpose structure M-1 will be constructed on private land and will be maintained by the Union County Soil Conservation District and Union County. Maintenance funds will be raised as needed by a tax levy on the agricultural lands of the county as provided by Iowa law.

Structure M-1 will be maintained jointly by the Union County Soil Conservation District, Union County, and the City of Creston. The City will provide funds for its share of maintenance from water revenue.

Five farm operations involving 15 people will be disrupted by the installation of measures included in this project. Three will lose their farmsteads and be relocated. No school age children are living on farms that will be relocated.

The total estimated installation cost of the project measures is \$3,690,790 of which \$797,530 is for land treatment measures and \$2,893,260 for the structural measures and the municipal and industrial water supply. The construction costs of \$1,770,870 will be shared \$1,140,910 from PL-566 funds and \$629,960 from other funds.

## 2. Environmental Impact

The planned land treatment measures will reduce average annual sheet and rill erosion on the erodible upland from 3.4 to 2.8 tons per acre per year.

An additional 5 percent of the watershed land will be protected from sheet erosion damage resulting in a total of 88 percent protected. The application of land treatment measures will maintain or increase productivity.

The structures will prevent gully erosion damage to 3,255 acres during the next 100 years. Of these 3,255 acres, voiding will claim 1,384 acres and 1,871 acres will be depreciated from the present use if the gullies are not stabilized. The average annual land damage will be reduced 97 percent. The average annual gully damage to boundary fences at

32 locations and to farm gully crossings at 26 locations will be reduced 95 percent.

The following table, for various flood frequencies, shows a comparison of the areas flooded with and without the planned project:

Frequency in Years	Area Flooded in Acres			
	: Without : Project	: With : Project	: :	Reduction
100	2,272	1,421		851
50	2,184	1,244		940
25	2,080	1,072		1,008
10	1,876	761		1,115
5	1,492	466		1,026
2	848	75		773
1	314	35		279
0.5	39	0		39

The average annual area flooded will be reduced from 1,104 acres to 246 acres. Floodwater damages on the 2,272-acre flood plain will be reduced 78 percent. Presently 68 percent of the flood plain is used for corn and soybean production and 26 percent for pasture. With the project installed, 65 percent of the pasture land is expected to be used for corn and soybeans.

Floodflow from 66 percent of the watershed area will be reduced. Installation of the project measures is not expected to have a major effect on the low flows in the stream channels of the watershed. Twelve Mile Creek is an intermittent stream below the multiple-purpose structure. Embankment and foundation seepage may create low flows in the ephemeral streams below the larger structures. These low flows will either evaporate or enter the ground water reservoir and are not expected to make changes in Twelve Mile Creek low flows. Evaporation from the water surfaces created by the project and water use by the City of Creston, could decrease the average discharge by as much as 12 percent. The structures will reduce the peak floodflows by temporarily storing runoff water and releasing it over an extended period. This storage will not materially affect the water yield, but will extend the length of time water flows in the channel. The reduction in peak floodflows at the U. S. Highway 34, two miles below U. S. Highway 169, and at the lower end of the watershed is as follows:

Percent Reduction in Peak Flows			
Frequency	: Highway	: Below	:
in Years	: 34	: Highway 169	: Lower
100	85	46	46
50	83	45	45
25	81	45	44
10	77	45	43
5	78	46	43
2	80	51	45
1	81	55	48

The water supply reservoir for Afton will not be affected by the project. No structural or land treatment measures are planned above this reservoir.

Floodwater damages on 8,850 acres of the Thompson River flood plain below the mouth of Twelve Mile Creek will be reduced approximately 14 percent.

There are 346 farms in the watershed. One hundred and twenty-eight farms will benefit from the reduction of gully erosion damage and 54 farms will benefit from the floodwater damage reduction.

County highway replacement and maintenance costs caused by gully erosion will be reduced at 7 bridges and 19 other road locations by \$17,550 annually.

The multiple-purpose structure will provide 633 acres of water. This area will be available for recreational use and as aquatic habitat and will be lost as terrestrial habitat. The 8,000 acre-feet of municipal and industrial water will be provided for Creston at less cost than it could develop a single purpose supply. The water will be available for longer than the 100-year project evaluation period. The recreational development associated with the water will provide 31,500 annual visitor days of incidental recreational opportunity. This development with the water area will require conversion of 1,380 acres to public ownership thereby reducing the tax base. Crop production on 612 acres, pasture production on 424 acres, and forest production on 66 acres will be lost. Temporary flooding in the retarding pool can result in interruption of wildlife use of 241 acres. Four roads will be closed by being permanently inundated. These road closings will require people living on the east side of the pool to travel up to six additional miles to get to Creston. The raw water transmission line will follow existing transportation rights-of-way to the treatment plant and will pose no environmental threat. Approximately 1 man-year of employment will be provided by the municipal and industrial water development.

The grade stabilization and floodwater retarding structures will provide 291 acres of water. These pools will be available as aquatic habitat and



will provide fishing and incidental recreation for most of the economic life of the project. They will cause loss of crop production on 130 acres, pasture production on 88 acres, forest production on 30 acres, and terrestrial wildlife habitat on 291 acres. The water in these pools will be available for livestock and fire fighting. The dams and spillways of these structures will cause the loss of crop production on 48 acres, pasture production on 41 acres and temporary wildlife use of 89 acres. After these areas are seeded they will be available as grassland habitat for wildlife use. Floodwater in the retarding pools can result in reduction of crop yields on 109 acres, interruption of pasture use of 139 acres, and interruption of wildlife use of 421 acres.

Sediment entering the Thompson River from the watershed will be reduced from 113,842 tons to 47,112 tons annually.

The sediment produced from sheet erosion contains herbicides, insecticides, and plant nutrients. By reducing the amount of this sediment leaving the watershed, a corresponding reduction will be made in the amount of herbicides, insecticides, and plant nutrients leaving the area.

Studies<sup>1/</sup> of agricultural runoff water show that pesticides reach Iowa streams both as soluble material and through adsorption on soil particles which make up much of the sediment in Iowa rivers. In this study, approximately 50 percent of the pesticide load was carried by the sediment which gradually settles to the bottom and remains there for extended periods.

Agricultural chemicals are used on cropland fields that are 53 percent of the Twelve Mile Creek Watershed. Amounts of agricultural chemicals leaving crop fields are variable and data are not available on levels entering the Thompson River. However, 66,730 tons of sediment will be prevented from entering the Thompson River annually by the planned project. This will result in reduced levels of agricultural chemicals leaving the watershed.

Water quality will be maintained and/or enhanced by installation of the project measures. Land treatment measures will reduce the amount of soil leaving fields and entering channels and impoundments. Reduction of this sediment and its attached water pollutants will improve water quality. The chemical content of runoff water is extremely variable, depending on land use, cultural practices, and season. Data are not

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<sup>1/</sup> Chlorinated Hydrocarbon Pesticides in Iowa Rivers. Pesticides Monitoring Journal, 4(4): 216-219, 1971  
 Dieldrin Levels in Fish from Iowa Streams. Pesticides Monitoring Journal 5: 12-16, 1971  
 Pesticides and Heavy Metals in the Aquatic Environment. Health Laboratory Science, Vol. 9, No. 2, April 1972.

available on the physical and chemical content of runoff waters from the watershed. The soils and farming operations are very similar to the drainage area that presently supplies water for Creston. They have no water quality problems at this time. With more land adequately protected from excessive soil loss in the drainage area of the multiple-purpose structure, the water quality will excel their present supply. There are no large feedlots or known point sources of waste discharge above the impounding structures and 75 percent of the drainage area will be adequately protected from soil loss before a structure is constructed. Water temperatures in the stream should not be affected by the project. There are no planned releases from the reservoirs and any seepage causing surface flow would be at stream temperature a short distance below the structures. When there are no streamflows, this water would attain either air or ground temperature until it evaporates or enters the ground water reservoir.

Inundation of 26 miles of intermittent or ephemeral stream channels will modify present ecological communities in these areas.

The addition of the recreational area and the water areas will improve the esthetic values of this watershed. An increase in traffic, noise, solid waste and air pollution may result from recreational use.

Of the 3 farm families being relocated by the project, 2 plan to discontinue farming and move to Creston. The third family plans to move to a nearby farm in the vicinity of the watershed. Adequate safe and sanitary housing is to be available when needed for the two families moving to town. Although their present housing is safe and sanitary they will upgrade their housing with the move. The third family is expected to obtain housing similar or improved over their present house which is considered adequate. Two other landowners who will lose one-third to one-half of their present farms will both remain on their farmsteads. They both plan to rent to maintain their operations.

Soil particles and engine exhaust emissions from the construction operations will enter the atmosphere. Runoff water from the construction areas will contain sediment which will be carried into the stream channels. Noise will bother people living close to the structure sites. The amount of these pollutants will be reduced as much as possible and, in all cases, will be in compliance with all Federal, State and local laws concerning pollution control and abatement.

### 3. Favorable Environmental Effects

- (1) Reduce sheet and rill erosion from 3.4 to 2.8 tons per acre per year.
- (2) Prevent loss through voiding of 1,384 acres and depreciation of 1,871 acres by gully erosion on 128 farms.



- (3) Reduce gully erosion damages to 32 boundary fences and 26 farm gully crossings.
- (4) Reduce sediment entering the Thompson River by 66,730 tons annually.
- (5) Reduce average annual floodwater damages on 54 farms on 2,272 acres by 78 percent.
- (6) Increase income to farmers in the watershed.
- (7) Reduce county highway maintenance cost at 7 bridge sites and 19 road locations.
- (8) Reduce maintenance costs to railroads at 6 locations.
- (9) Provide public access of 1,380 acres containing a 633 acre lake.
- (10) Provide 1 man-year per year of employment opportunity.
- (11) Provide an estimated 31,500 visitor days of incidental recreation annually.
- (12) Provide 8,000 acre-feet of municipal and industrial water supply for Creston at lower cost than alternative supplies.
- (13) Provide 924 acres of aquatic habitat.
- (14) Reduce floodwater damage on 8,850 acres of Thompson River flood plain.
- (15) Provide water for livestock and fire fighting.

4. Adverse Environmental Effects Which Cannot Be Avoided

- (1) The tax base will be reduced by 1,380 acres.
- (2) The ecological community in 26 miles of intermittent or ephemeral stream channels will be changed.
- (3) Crop production will be lost on 744 acres, pasture production lost on 488 acres, and forest production lost on 96 acres.
- (4) Floodwater in the retarding pools will result in temporary interruption of pasture use of 139 acres, decreased crop yields on 109 acres, and temporary interruption of wildlife use of 662 acres.
- (5) Terrestrial wildlife use will be lost on 924 acres and temporarily interrupted on 120 acres during construction.

- (6) Three families will be relocated by the project.
- (7) Five farm operations involving 15 people will be affected by the project.
- (8) Closing 4 roads will result in increased travel distance for people to reach Creston, Iowa
- (9) Noise pollution from construction operations will bother people living close to the structure sites.
- (10) Temporary air and water pollution will occur during construction operations.
- (11) An increase in traffic, noise, solid waste and air pollution from recreational use will occur.

## 5. Alternatives

The installation of the planned land treatment measures alone is an alternative to the planned project. This alternative would provide the same reduction in sheet erosion as the planned project. It would have no appreciable effect on the floodwater and gully erosion damages. A water supply for Creston would not be provided. The estimated installation cost of this alternative is \$797,530.

An alternative to providing a municipal and industrial water supply at structure M-1 is for Creston to drill and develop deep wells. However, the problems of ground water supply are more serious in this area than in any other part of the state.

Ground water sources are difficult to find in sufficient quantities. Shallow sources are not dependable and the deep sources may contain large quantities of soluble minerals. Creston would need a new water treatment plant to remove the minerals or to improve the quality to an acceptable level. The cost of such deep wells and the treatment of the water is high in relation to surface water sources.

Another alternative for Creston is to provide a surface water supply independent of the watershed project. A single purpose structure would approach the same size and cost as the multiple-purpose structure and would thus be more expensive for the City of Creston. If 2 single purpose structures were built, the result would be a greater loss of crop and pasture production and wildlife habitat. A new surface water supply could be treated in Creston's present treatment plant.

An alternative to the 22 floodwater retarding structures is installation of 9 of the floodwater retarding structures and approximately 18 miles of

stream channel work. The estimated construction cost of this alternative is \$277,000 greater than for the planned project. Operation and maintenance cost of the modified channel is estimated to be \$27,000 per year. Modification of the stream channel would destroy the wildlife habitat along the channel. Crop and pasture production and wildlife use on 220 acres of bottom land would be lost with the channel.

An alternative to the planned action is one of no project. Needed conservation land treatment would continue to be installed under the going program of the Soil Conservation District, and be completed in an estimated 15 to 20 years. Flood damage to cropland and pastureland would continue. The effect of this would be more individual effort on the part of farmers to deepen and straighten the channel and to alleviate this problem. Indiscriminate deepening and straightening of the channel would probably create an unstable outlet, and the gully erosion problem would most likely be accelerated. As gully erosion continues and farm crossings become more expensive or impossible to maintain, longer travel distances may cause some upland fields to be idled or used less intensively. More travel of farm equipment would occur on public roads creating a traffic and safety hazard. The City of Creston would continue with an inadequate water supply or develop an alternative source at higher cost. Net annual monetary benefits of \$38,250 will be foregone if the project is not implemented.

6. Relationship Between Local Short Term Uses of Man's Environment and the Maintenance and Enhancement of Long Term Productivity

The land in the watershed is dedicated almost exclusively to agricultural production. It is expected that with the project installed this land use will continue. The bottom land is expected to be farmed more intensively. The level of flood protection provided by the project will not encourage flood plain development for purposes other than agricultural production. Watershed protection by the establishment of conservation land treatment and grade stabilization structures will halt land degradation and hold more options open for future use of the upland areas.

The municipal and industrial water supply for the City of Creston will be adequate for foreseeable development within the city. An adequate water supply will permit the planned, orderly development of the city.

The flood protection afforded by the project will be effective even after the economic life of the structures. The structures will continue to function and have flood control until sediment encroachment has effectively reduced the volume allocated to flood storage. Grade stabilization structures for gully control, with proper maintenance, will be effective indefinitely. Twelve Mile Creek is one of three P.L. 566 watersheds within the State of Iowa which drain into the Thompson River. Three Mile Creek Watershed, upstream, is in operations or construction stage and an



application for assistance has been received on 1 watershed downstream from Twelve Mile Creek. At present no other project action is being considered on the upper reaches of the Thompson River within the State of Iowa.

Twelve Mile Creek and Three Mile Creek Watersheds will reduce floodwater damages on 10,300 acres of Thompson River flood plain by approximately 25 percent. Together they will reduce peak floodflows from 89 square miles (23 percent) of the Thompson River drainage at the mouth of Twelve Mile Creek.

#### 7. Irreversible and Irretrievable Commitment of Resources

Sediment pools will inundate 924 acres comprised of 412 acres of cropland, 279 acres of pasture, 96 acres of forest, and 137 acres of other land. Temporary flood pools will periodically inundate 662 acres comprised of 171 acres of cropland, 219 acres of pasture, 114 acres of forest and 158 acres of other land. Dams and spillways will occupy 64 acres of cropland and 56 acres of pasture. One thousand three hundred and eighty acres will be converted from private to public ownership. The required capital of \$3,690,790 will also be committed.

#### 8. Consultation with Appropriate Federal Agencies and Review by State and Local Agencies Developing and Enforcing Environmental Standards

When the application for assistance under Public Law 566 was received and approved by the Iowa Department of Soil Conservation and transmitted to the Soil Conservation Service, notices of the application were mailed to State and Federal agencies having interest in water resource developments in the state. A news release was also prepared for state newspapers announcing approval of the application. When planning was authorized for Twelve Mile Creek Watershed on February 12, 1968, notices were again sent to interested agencies in order that they might participate in and make inputs to the planning effort. Meetings were held on March 28, 1968 and January 7, 1970 to allow the general public to make input into the planning effort. The planning of the watershed was coordinated with the Iowa Highway Commission in order that the plan would not conflict with any pending highway plans in the area.

Coordination with the Iowa Natural Resources Council during the development of the plan prevented a conflict from developing between the watershed work plan and a natural gas transmission line scheduled for construction through the watershed.

Wildlife and environmental considerations were handled during the planning by the joint efforts of the Department of the Interior, Bureau of Sport Fisheries and Wildlife, State Conservation Commission, and the Service.

Mitigation measures in the plan for habitat losses were agreed to by these three agencies. A preliminary map of the structural improvements within the project area was furnished to a representative of the State Archeologist's Office in April 1970. He reviewed the area to assure places of historical or archeological value would not be disturbed.

Planning and coordination for the project culminated with an informal field review on December 17, 1971. Draft copies of the work plan and the preliminary notes for the environmental statement were circulated to interested Federal and State agencies prior to the meeting. Inputs from these agencies have been considered in developing the final work plan and the draft environmental statement.

The following agencies were asked to review and comment on the draft environmental statement:

Governor of Iowa (Department of Soil Conservation)  
 State Clearinghouse (Office for Planning and Programming)  
 Department of the Army  
 Department of Commerce  
 Department of Health, Education and Welfare  
 Department of the Interior  
 Department of Transportation  
 Environmental Protection Agency  
 Federal Power Commission

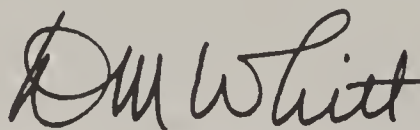
9. Appendix A - Comparison of Benefits and Costs for Structural Measures - modification of Table 6 from the work plan.

Appendix B - Summary of comments received and response thereto.

Appendix C - Letters of comment received on draft environmental statement.

Appendix D - Project Map

APPROVED BY



Acting

Kenneth E. Grant, Administrator

Date

DEC 20 1973



## COMPARISON OF BENEFITS AND COSTS FOR STRUCTURAL MEASURES

Twelve Mile Creek Watershed, Iowa

(Dollars) 1/

		AVERAGE ANNUAL BENEFITS												
Eval.	Unit	Structural Measures	Damage Reduction	Inci-dental	M&I	More	Inten-sive	Changed Land Use	Secon-dary	Total	Average Annual Cost	Benefit Cost Ratio		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)				

1	All Structural Measures	97,080	20,500	58,800	10,760	10,240	6,210	203,590	152,920	1.33 to 1.0				
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Project Administration	xx	xx	xx	xx	xx	xx	xx	xx	12,150	xx			xx	
Total	97,080	20,500	58,800	10,760	10,240	6,210	203,590	165,070	1.23 to 1.0					

1/ Price Base: Adjusted normalized prices, April 1966, for benefits; costs from Table 4

Date: November 1971

2/ A 5-3/8 percent interest rate was applied in the work plan. A 6-7/8 percent interest rate and current normalized prices for Agricultural Commodities as established by the Water Resources Council would change selected data to the following: Annual project benefits would be \$259,330; project cost would be \$207,903 annually; and the project benefit-cost ratio would be 1.2 to 1.0.

Date: December 1973

SUMMARY OF COMMENTS AND RESPONSES

Each issue, problem or objection is summarized and a response given on the following pages. Comments are serially numbered where agencies have supplied multiple comments. The original letters of comment appear in Appendix C.

Governor of Iowa

Comment: The Iowa Department of Soil Conservation has reviewed the work plan and draft environmental statement and approved both.

Response: None.

State Clearinghouse

Comment: The Office for Planning and Programming circulated draft environmental statement for review by State Agencies. Iowa Highway Commission stated that future highway improvements have been adequately considered.

Response: None.

Department of the Army

1. General Comment. The statement would be easier to read if more subheadings were used and if each were given a numerical designation to follow the main headings.

Response: None.

Comment 2a: Page 8, paragraph 3 - "Recreation" - The particular aspect of recreation related to "water and land resource problems" is not clear. Neither is the relationship of paragraph 4 to this paragraph clear.

Response: The recreation problems subsection has been deleted. Since existing water based recreation at Green Valley and other nearby state parks adequately meet the needs of the area, no recreation problem exists.

Comment 2b: Page 8, paragraph 9 - the acreage figures given add up to a greater total (55,085) than the acreage given for the watershed (55,030).

Response: The numbers were in error and the statement has been corrected.

Dept. of the Army (continued)

Comment 2c: Page 10, paragraph 2 - This is a mitigating measure and should also be discussed under impacts on page 12.

Response: The mitigation measures replace or compensate for destruction of an existing resource and as such do not result in an environmental loss or gain. The land use change required for the mitigation measures is included with the structural measures.

Comment 2d: Page 10, paragraph 2 - It would be helpful to a reviewer to indicate how much of the 2,212 acres lost to the project is quality wildlife habitat which will be mitigated by 155 acres.

Response: We believe the paragraph is self-explanatory and shows that 155 acres of wildlife habitat loss will be mitigated. This is further explained on page 11 of the draft (page 11 of final). The Consultation section, page 21 shows the coordinated efforts of the Service, USDI, Fish and Wildlife Service, and State Conservation Commission in determining mitigation acres.

Comment 2e: Page 11, paragraph 2 - Loss of wildlife habitat is an adverse impact which should be discussed under impacts on page 12.

Response: Pages 10 and 11 of the final statement clearly show that habitat losses will be mitigated. The carrying capacity of the watershed will not change.

Comment 2f: Page 12, paragraph 4 - Three of the five families to be affected will be relocated. Item (6) on page 16 indicates five families will be relocated.

Response: Item (6) page 16 (page 19 of final) has been corrected.

Comment 2g: Page 16 - The impact on the environment of the recreational usage should be discussed.

Response: Concur. Additional explanation has been included on pages 17 and 19.

Department of Commerce

No comments received.

Department of Health, Education and Welfare

Comment: The proposed project does not have an apparent impact on Department of Health, Education and Welfare programs.

Response: None



Department of Transportation

Comment: The Department of Transportation reviewed the environmental statement and has neither comment nor objection to the project.

Response: None.

Federal Power Commission

No comments received.

Department of the Interior

Comment 1: The work plan makes no reference to a gas pipeline in the upper part of the watershed (in Adair County) nor to a petroleum pipeline crossing the watershed east of Creston. The environmental statement, in the section on consultation with other agencies, page 18, describes coordination which prevented a conflict between the watershed plan and a planned gas transmission line. We assume this latter pipeline is the one shown on the project map in Adair County; this line would not be affected by the project.

We believe, however, that additional discussion is needed in both the work plan and the environmental statement on the petroleum pipeline in section 4, T.72N., R.30W., and sections 26, 33-35, T.73N., and R.30W. This pipeline apparently would not be affected by grade stabilization structure No. 68-2 but could be in the left abutment of structure No. 67. The pipeline crosses the reservoir site of multiple-purpose structure No. M-1. Although the inundation of the pipeline would not affect it, normally it is necessary to install check valves in the line on both sides of the reservoir to reduce leakage should the line be ruptured. We believe that consultation with the pipeline company is necessary or that results of prior consultation should be discussed.

Response: The gas pipeline shown in Adair County does not affect any proposed works of improvement. The gas pipeline discussed in the Consultation section has not been constructed and is not shown on the project map. An agreement has been reached between the sponsors and American (Standard) Oil Company for modification of its pipeline to permit submergence by structure M-1. The pipeline is approximately 200 feet outside the construction area for structure No. 67.

Comment 2: We believe the draft statement should contain a discussion on the geology at the proposed construction sites. The only geologic investigation noted was that for the site of the largest earth fill dam and subsurface conditions appear to have been adequately considered (see pages 57 and 58, work plan).

Response: The geology of the watershed is discussed in the Environmental Setting section of the statement. Detailed geologic investigations will be made at each site prior to structure design. The SCS makes detailed geologic investigations during planning only for multiple-purpose and high-hazard sites.

Comment 3: A more concise explanation of the allocation of storage for this plan should be provided in the draft statement.

Response: The final statement has been modified on pages 9 and 10 to explain the storage provided in structure M-1.

Comment 4: Discussion on page 14 of the statement points out that insecticides, herbicides, and plant nutrients adsorbed on sediments will be prevented from leaving the watershed, thus enhancing water quality downstream. However, the negative effect of these materials on the water quality in the project impoundments is not mentioned. A statement is made on page 31 of the work plan that the anticipated water quality will be adequate. We believe the work plan and the draft statement should expand the discussion on water quality to support the conclusion that water quality will be adequate at these impoundments.

Response: The statement has been modified on pages 16 and 17 to discuss water quality in the watershed.

Comment 5: The city of Afton obtains its water supply from a reservoir on a tributary of Twelve Mile Creek (page 2, environmental statement). An examination of maps available in the Geological Survey District Office, Iowa City, indicates that Afton's reservoir could be in, or very near, this project area. The effects of the project upon this water supply reservoir should be discussed in the statement and work plan.

Response: The final statement has been modified on page 15 to indicate that the project will have no effect on the Afton water supply reservoir.

Comment 6: The environmental statement is silent concerning the relation of the proposal to cultural (historic, archeological, architectural) resources. The statement shows no indication that the considerations required by the National Historic Preservation Act (80 Stat. 915) and Executive Order 11593 (May 13, 1971) entered into planning for the project or for Federal involvement in it. Because the statement thus neglects an integral portion of the environment and the relevant protective requirements, it does not appear to be in compliance with the spirit and intent of the National Environmental Policy Act.

Dept. of Interior (continued)

Comment 6:

(cont'd)

As early as possible in the planning process, steps should be taken to determine whether any properties listed in or eligible for listing in the National Register of Historic Places will be affected by the project. The National Register is published annually and updated monthly in the Federal Register and should be consulted in making the initial determination. The Iowa State Historic Preservation Officer should also be consulted concerning the relation between the proposal and cultural resources--particularly those he may deem eligible for nomination to the National Register. If any present or potential National Register properties will be affected, the statement should describe the steps being taken to comply with Section 106 of the National Historic Preservation Act according to the procedures published in the Federal Register of February 28, 1973. An interdisciplinary evaluation of cultural resources in areas to be affected by the project should be undertaken by persons professionally trained to locate, identify, and evaluate historic, archeological, and architectural resources. Such a survey should provide information on cultural resources that will be the basis for describing them as a portion of the environment, assessing impacts upon them, developing procedures to mitigate adverse impacts, and outlining all unavoidable adverse effects and irreversible and irretrievable commitments of cultural resources.

Response: This was discussed in the Consultation section, page 18 of the draft (page 22 of the final). Service policy on implementation of P.L. 86-523 has been added to page 12.

Environmental Protection Agency

Comment 1a: Neither the existing nor predicted streamflows of Twelve Mile Creek are provided in the draft statement. Data on recorded low flows, average flows, historic high flows and the anticipated flows in the creek after the project is completed should be included in the final statement.

Response: The final statement has been modified on page 4 to reflect this comment. Streamflow has not been measured at a gaging station and consequently records are not available. The estimated effect of the project on streamflow has been included on page 14.

Comment 1b: Runoff from agricultural land may contain herbicides, insecticides and plant nutrients. By reducing the amount of erosion and sedimentation in the watershed, a corresponding reduction in concentration of agricultural pollutants may



E.P.A. (continued)

also be realized. The statement should indicate if pollutants from agricultural sources could be a problem in the M-1 reservoir structure.

Response: Discussion of the expected water quality in M-1 and the other reservoirs has been added to the statement on pages 16 and 17.

Comment 1c: Although the quality of water in the reservoir is anticipated to be adequate as a source of municipal water supply, the chemical and physical effects associated with the proposed project upon the water quality of the watershed are not adequately discussed. Sedimentation is the only water quality parameter which is presented in enough detail to permit an assessment of the impact upon the environment. The final statement should discuss all aspects of water quality, both within the permanent impoundments and in the flows downstream from the reservoir. Without this information, we are unable to determine the effects of the project on water quality.

Response: The statement has been modified on pages 16 and 17 to discuss water quality in the watershed.

Comment 2: Construction of the grade stabilization and floodwater retarding structures including the multiple-purpose reservoir may produce temporary problems of noise, air, and water pollution. In order to prevent, abate, and control any environmental pollutants which might arise from construction activities, the contractor and his subcontractor should be required to comply with all applicable Federal, State, and local laws and regulations concerning environmental pollution control and abatement.

Response: Concur. The statement has been modified on page 17 to show that SCS is aware of these problems and will require contractors to comply with laws and regulations as stated in the comment.

Comment 3: As you know, the SCS impact statement for Twelve Mile Creek Watershed indicates that one project measure will be a water supply reservoir for the City of Creston. There is also an REA statement for work on the Creston Power Plant. It is at least possible that the proposed water source for the City and that for cooling of the Plant are one and the same. If so, the SCS statement should discuss that fact.

Response: The REA Creston power plant obtains drinking water from Creston. They do not obtain or plan to use water for cooling from the City of Creston.

# Department of Soil Conservation Appendix C



Grimes State Office Building / Des Moines, Iowa 50319

Telephone: (515) 281-5851

William H. Greiner, Director  
Fred Higginbottom, Asst. Director  
Jack Kubicek, Administrative Asst.

September 4, 1973

Mr. Kenneth E. Grant  
United States Department  
of Agriculture  
Soil Conservation Service  
Washington, D.C. 20250

Dear Mr. Grant:

The State Soil Conservation Committee met on August 9, 1973, at which time the work plan for the Twelve Mile Creek Watershed, which is located in Union, Adair and Ringgold Counties, Iowa, was discussed. A draft of the environmental statement, in accordance with Section 102(2)(C) of the National Environmental Policy Act of 1969 (Public Law 91-190), was also discussed.

The members of the State Soil Conservation Committee have taken official action to approve the work plan and environmental statement for the Twelve Mile Creek Watershed.

If you have need for any additional information, please do not hesitate to contact this office.

Sincerely yours,

William H. Greiner  
Director

cc: Governor Robert D. Ray

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SOIL CONSERVATION SERVICE  
WASHINGTON, D.C.

## State Soil Conservation Committee

George Annan, Chairman, Clarinda  
Farmer Member  
Southern Iowa Cons. Dist.

Harroll J. Hobson, Eldora  
Farmer Member  
Iowa Cedar Cons. Dist.

B. Liddy, Des Moines  
Secretary of Agriculture

Donald Johnson, Vice Chairman,  
Fairfield  
Farmer Member  
Skunk River Cons. Dist.  
J. Thomas Kenny, Akron  
Farmer Member  
Western Iowa Cons. Dist.  
Othie R. McMurry, Des Moines  
Director, Iowa Natural  
Resources Council

Fred Cherry, Rowley  
Farmer Member  
Northeast Iowa Cons. Dist.

Gerald Norland, Cylinder  
Farmer Member  
Des Moines River Cons. Dist.

Fred A. Priewert, Des Moines  
Director, Iowa Conservation  
Commission

Sherry R. Fisher, Des Moines  
Member at Large  
Representing Cities & Towns

Dr. Marvin Anderson, Ames  
Dean of Extension, ISU

Wilson T. Moon, Des Moines  
U.S. Soil Cons. Service

STATE OF IOWA

# Office for Planning and Programming

523 East 12th Street, Des Moines, Iowa 50319 Telephone 515 281-5974

ROBERT D. RAY  
Governor

ROBERT F. TYSON  
Director

August 10, 1973

Mr. Wilson T. Moon  
State Conservationist  
U.S. Department of Agriculture  
Soil Conservation Service  
823 Federal Building  
210 Walnut Street  
Des Moines, Iowa 50309

Re: PNRS Review  
Project #740055  
Environmental Impact Statement  
on Twelve Mile Creek Watershed

Dear Mr. Moon:

The above mentioned material has been received in this office and is in the process of being reviewed by the appropriate State agencies. We have assigned your project the following number: 740055. This number must be used in all correspondence relating to your project.

Should we develop any questions or comments, we will be in touch with you. Thank you for the information.

Sincerely,

*A. Thomas Wallace, Jr.*

A. Thomas Wallace, Jr.  
Federal Funds Coordinator

*jb for*

ATW:jb





## THE IOWA STATE HIGHWAY COMMISSION - 515-296-1101 - AMES, IOWA 50010

JOSEPH R. COUPAL, JR.  
Director

August 17, 1973

H. E. GUNNERSON  
Chief Engineer

REFER TO: Letter of Intent  
Project: 740055  
Soil Conservation  
Service  
Twelve Mile Creek

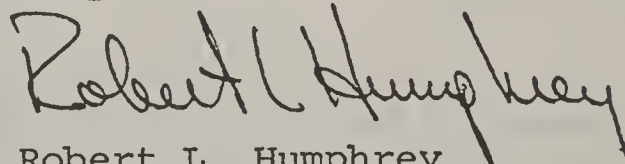
Mr. A. Thomas Wallace, Jr.  
Federal Funds Coordinator  
Office for Planning and Programming  
523 East 12th Street  
Des Moines, Iowa 50319

Dear Mr. Wallace:

I have reviewed the draft environmental statement for the Twelve Mile Creek watershed project. It appears that the Soil Conservation Service has taken adequate consideration of future highway improvements in preparing their project plan. No conflicts should develop with this project.

Thank you for the opportunity to review this statement.

Very truly yours,



Robert L. Humphrey  
Planning & Programming  
Engineer

TJ:kk

RECEIVED  
AUG 20 1973

OFFICE FOR PLANNING  
AND PROGRAMMING

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DEPARTMENT OF THE ARMY  
OFFICE OF THE UNDER SECRETARY  
WASHINGTON, D.C. 20310

Appendix C

18 OCT 1973

Honorable Robert W. Long  
Assistant Secretary of Agriculture  
Washington, D. C. 20250

RECEIVED MAIL ROOM  
1973 OCT 26 PM 2:21  
SOIL CONSERVATION SERVICE  
WASHINGTON, D.C.

Dear Mr. Long:

In compliance with the provisions of Section 5 of Public Law 566, 83rd Congress, the Administrator of the Soil Conservation Service, by letter of 19 July 1973, requested the views of the Secretary of the Army on the work plan for Twelve Mile Creek Watershed, Iowa.

We have reviewed this work plan and foresee no conflict with any projects or current proposals of this Department. The draft of the environmental statement satisfies the requirements of Public Law 91-190, 91st Congress, insofar as this Department is concerned. Specific comments on the environmental statement are inclosed for your consideration.

Sincerely,

Charles R. Ford  
Acting Special Assistant to the  
Secretary of the Army (Civil Functions)

1 Incl  
As stated

Comments on Draft EIS  
Twelve Mile Creek Watershed, Iowa

1. General Comment. The statement would be easier to read if more sub-headings were used and if each were given a numerical designation to follow the main headings.

2. Specific Comments.

a. Page 8, paragraph 3 - "Recreation" - The particular aspect of recreation related to "water and land resource problems" is not clear. Neither is the relationship of paragraph No. 4 to this paragraph clear.

b. Page 8, paragraph 9 - The acreage figures given add up to a greater total (55,085) than the acreage given for the watershed (55,030).

c. Page 10, paragraph 2 - This is a mitigating measure and should also be discussed under impacts on page 12.

d. Page 10, paragraph 2 - It would be helpful to a reviewer to indicate how much of the 2,212 acres lost to the project is quality wildlife habitat which will be mitigated by 155 acres.

e. Page 11, paragraph 2 - Loss of wildlife habitat is an adverse impact which should be discussed under impacts on page 12.

f. Page 12, paragraph 4 - Three of the five families to be affected will be relocated. Item (6) on page 16 indicates five families will be relocated.

g. Page 16 - The impact on the environment of the recreational usage should be discussed. Compaction of soil by vehicles, sanitation facilities, destruction of vegetation, etc. In addition the impact of boating - bank erosion from boat wakes, safety hazards, disturbance of fish spawning and nests - should be discussed.





DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE  
REGION VII  
FEDERAL BUILDING  
601 EAST 12TH STREET  
KANSAS CITY, MISSOURI 64106

OFFICE OF  
THE REGIONAL DIRECTOR

October 1, 1973

RECEIVED MAIL ROOM  
1973 OCT -5 PM 2:55  
SOIL CONSERVATION SERVICE  
WASHINGTON, D.C.

Mr. Kenneth E. Grant  
Administrator  
US Department of Agriculture  
Soil Conservation Service  
Washington, D.C. 20250

Dear Mr. Grant:

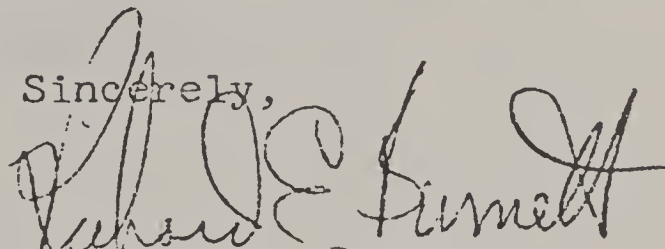
RE: Draft Environmental Statement  
Twelve Mile Creek Watershed, Iowa

We have reviewed the draft environmental impact statement and do not dispute the findings listed either in terms of the facts or the extent of the projected environmental impacts.

Further the proposed project does not have an apparent impact on Department of Health, Education, and Welfare programs.

We appreciate this opportunity to review this impact statement.

Sincerely,

  
Richard E. Burnett  
Deputy Regional Director

ccs: Madeline Pospur  
William Matuszeski



DEPARTMENT OF TRANSPORTATION  
UNITED STATES COAST GUARD

MAILING ADDRESS. (G-WS/83)  
U.S. COAST GUARD  
400 SEVENTH STREET SW.  
WASHINGTON, D.C. 20590  
PHONE: (202) 426-2262

. 28 AUG 1973

Mr. Kenneth E. Grant  
Administrator  
Soil Conservation Service  
Department of Agriculture  
Washington, D. C. 20250

Dear Mr. Grant:

This is in response to your letter of 19 July 1973 addressed to Admiral Bender concerning the draft environmental impact statement for the Twelve Mile Creek Watershed, Union, Adair, and Ringgold Counties, Iowa.

The Department of Transportation has reviewed the material submitted. We have no comments to offer nor do we have any objection to the project.

The opportunity to review the draft environmental impact statement for this project is appreciated.

Sincerely,

A handwritten signature in dark ink, appearing to read "R. I. Price", is written over a large, stylized, light-colored circular mark.

R. I. PRICE  
Captain, U. S. Coast Guard  
Deputy Chief, Office of Marine  
Environment and Systems  
By direction of the Commandant

RECEIVED MAIL ROOM  
1973 AUG 31 AM 10:46  
SOIL CONSERVATION SERVICE  
WASHINGTON, D.C.



# United States Department of the Interior

OFFICE OF THE SECRETARY  
WASHINGTON, D.C. 20240

ER-73/1013

OCT 18 1973

RECEIVED MAIL ROOM  
1973 OCT 23 PM 12:24  
SOIL CONSERVATION SERVICE  
WASHINGTON D.C.

Dear Mr. Grant:

Thank you for your letter of July 19, 1973, requesting our views and comments on a work plan and draft environmental statement for the Twelve Mile Creek Watershed located in Union, Adair, and Ringgold Counties, Iowa.

The proposed project would not affect any existing or proposed unit of the National Park System, nor any site eligible for registration as a National Historic, Natural or Environmental Education Landmark. Further, both the work plan and the environmental statement are deemed adequate with respect to their discussion of the fish and wildlife resources of the watershed.

The work plan makes no reference to a gas pipeline in the upper part of the watershed (in Adair County) nor to a petroleum pipeline crossing the watershed east of Creston. The environmental statement, in the section on consultation with other agencies, page 18, describes coordination which prevented a conflict between the watershed plan and a planned gas transmission line. We assume this latter pipeline is the one shown on the project map in Adair County; this line would not be affected by the project.

We believe, however, that additional discussion is needed in both the work plan and the environmental statement on the petroleum pipeline in section 4, T.72N., R.30W., and sections 26, 33-35, T.73N., and R.30W. This pipeline apparently would not be affected by grade stabilization structure No. 68-2 but could be in the left abutment of structure No. 67. The pipeline crosses the reservoir site of multiple-purpose structure No. M-1. Although the inundation of the pipeline would not affect it, normally it is necessary to install check valves in the line on both sides of the reservoir to reduce leakage should the line be ruptured.



We believe that consultation with the pipeline company is necessary or that results of prior consultation should be discussed.

No reference is made in either the work plan or environmental statement on the effects of this project on the groundwater resources of the area. The shallow groundwater aquifers in this area are quite thin and generally yield only small amounts of water. Seepage from some of the reservoirs in this project may reach the groundwater. However, an evaluation of the effects would be a major task. Excluding siltation, which may reduce recharge locally, the effects should be beneficial.

In 1971 crushed limestone was produced in Adair County near Greenfield, in Union County near Thayer, and in Ringgold County near Mount Ayr. Sand and gravel was produced in Union County near Talmaze. The mineral resources in the three-county area are rather limited and we believe the proposed development for the Twelve Mile Creek Watershed will have little or no impact on these resources.

We have completed our review of the draft environmental statement for this project and submit the following comments for your consideration and use.

We believe the draft statement should contain a discussion on the geology at the proposed construction sites. The only geologic investigation noted was that for the site of the largest earth fill dam and subsurface conditions appear to have been adequately considered (see pages 57 and 58, work plan).

A more concise explanation of the allocation of storage for this plan should be provided in the draft statement. For example, the statement does not clearly indicate that the 8,000 AF of storage allocated for Creston's water supply is over and above that needed for sediment storage. Some clarification of this point will provide the reviewer of the statement with a better understanding of the proposal.

Discussion on page 14 of the statement points out that insecticides, herbicides, and plant nutrients adsorbed on sediments will be prevented from leaving the watershed, thus enhancing water quality downstream. However, the negative

effect of these materials on the water quality in the project impoundments is not mentioned. A statement is made on page 31 of the work plan that the anticipated water quality will be adequate. We believe the work plan and the draft statement should expand the discussion on water quality to support the conclusion that water quality will be adequate at these impoundments.

The city of Afton obtains its water supply from a reservoir on a tributary of Twelve Mile Creek (page 2, environmental statement). An examination of maps available in the Geological Survey District Office, Iowa City, indicates that Afton's reservoir could be in, or very near, this project area. The effects of the project upon this water supply reservoir should be discussed in the statement and work plan.

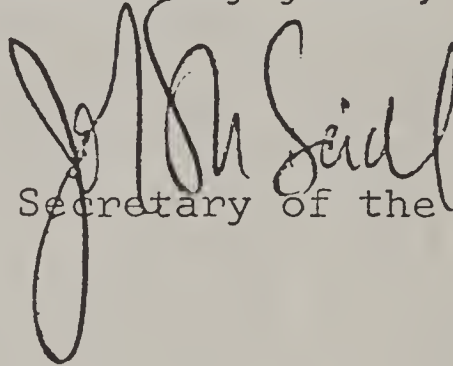
The environmental statement is silent concerning the relation of the proposal to cultural (historic, archeological, architectural) resources. The statement shows no indication that the considerations required by the National Historic Preservation Act (80 Stat. 915) and Executive Order 11593 (May, 13, 1971) entered into planning for the project or for Federal involvement in it. Because the statement thus neglects an integral portion of the environment and the relevant protective requirements, it does not appear to be in compliance with the spirit and intent of the National Environmental Policy Act.

As early as possible in the planning process, steps should be taken to determine whether any properties listed in or eligible for listing in the National Register of Historic Places will be affected by the project. The National Register is published annually and updated monthly in the Federal Register and should be consulted in making the initial determination. The Iowa State Historic Preservation Officer should also be consulted concerning the relation between the proposal and cultural resources--particularly those he may deem eligible for nomination to the National Register. If any present or potential National Register properties will be affected, the statement should describe the steps being taken to comply with Section 106 of the National Historic Preservation Act according to the procedures published in the Federal Register of February 28, 1973.

An interdisciplinary evaluation of cultural resources in areas to be affected by the project should be undertaken by persons professionally trained to locate, identify, and evaluate historic, archeological, and architectural resources. Such a survey should provide information on cultural resources that will be the basis for describing them as a portion of the environment, assessing impacts upon them, developing procedures to mitigate adverse impacts, and outlining all unavoidable adverse effects and irreversible and irretrievable commitments of cultural resources.

We trust the foregoing comments will assist you in finalizing the report for this watershed.

Sincerely yours,

A handwritten signature in dark ink, appearing to read "John S. Seidl". The signature is fluid and cursive, with a large loop at the end of the last name.

Deputy Assistant Secretary of the Interior

Mr. Kenneth E. Grant  
Administrator  
U.S. Department of Agriculture  
Soil Conservation Service  
Washington, D. C. 20250



## UNITED STATES ENVIRONMENTAL PROTECTION AGENCY



REGION VII  
1735 BALTIMORE - ROOM 249  
KANSAS CITY MISSOURI 64108

October 3, 1973

Mr. Kenneth E. Grant  
Administrator  
Soil Conservation Service  
U.S. Department of Agriculture  
Washington, D.C. 20250

Dear Mr. Grant:

We have reviewed the Draft Environmental Impact Statement for Twelve Mile Creek Watershed, Iowa. The project plan provides for construction land treatment measures, 11 grade stabilization structures for gully erosion control, 22 floodwater retarding structures, and one multiple purpose reservoir with capacity for floodwater retention, recreation, and municipal and industrial water. The project is assigned a rating of ER-2. This rating means the Environmental Protection Agency has environmental reservations with the water quality impacts of the project and requests additional information be included in the final statement. The following are our comments:

1. Water Quality

a. Neither the existing nor predicted stream flows of Twelve Mile Creek are provided in the draft statement. Data on recorded low flows, average flows, historic high flows and the anticipated flows in the creek after the project is completed should be included in the final statement.

b. Runoff from agricultural land may contain herbicides, insecticides and plant nutrients. By reducing the amount of erosion and sedimentation in the watershed, a corresponding reduction in concentration of agricultural pollutants may also be realized. The statement should indicate if pollutants from agricultural sources could be a problem in the M-1 reservoir structure.

c. Although the quality of water in the reservoir is anticipated to be adequate as a source of municipal water supply, the chemical and physical effects associated with the proposed project upon the water quality of the watershed are not adequately discussed. Sedimentation is the only water quality parameter which is presented in enough detail to permit an assessment of the impact upon the environment. The final

statement should discuss all aspects of water quality, both within the permanent impoundments and in the flows downstream from the reservoir. Without this information, we are unable to determine the effects of the project on water quality.

## 2. Adverse Environmental Effects

Construction of the grade stabilization and floodwater retarding structures including the multipurpose reservoir may produce temporary problems of noise, air, and water pollution. In order to prevent, abate, and control any environmental pollutants which might arise from construction activities, the contractor and his subcontractor should be required to comply with all applicable Federal, State, and local laws and regulations concerning environmental pollution control and abatement.

We appreciate the opportunity to review this draft statement. Please provide this office with a copy of the final Environmental Impact Statement, including review comments, when it is submitted to the Council on Environmental Quality.

Very truly yours,

*Edward C. Vest*

Edward C. Vest  
Environmental Impact Statement  
Coordinator





